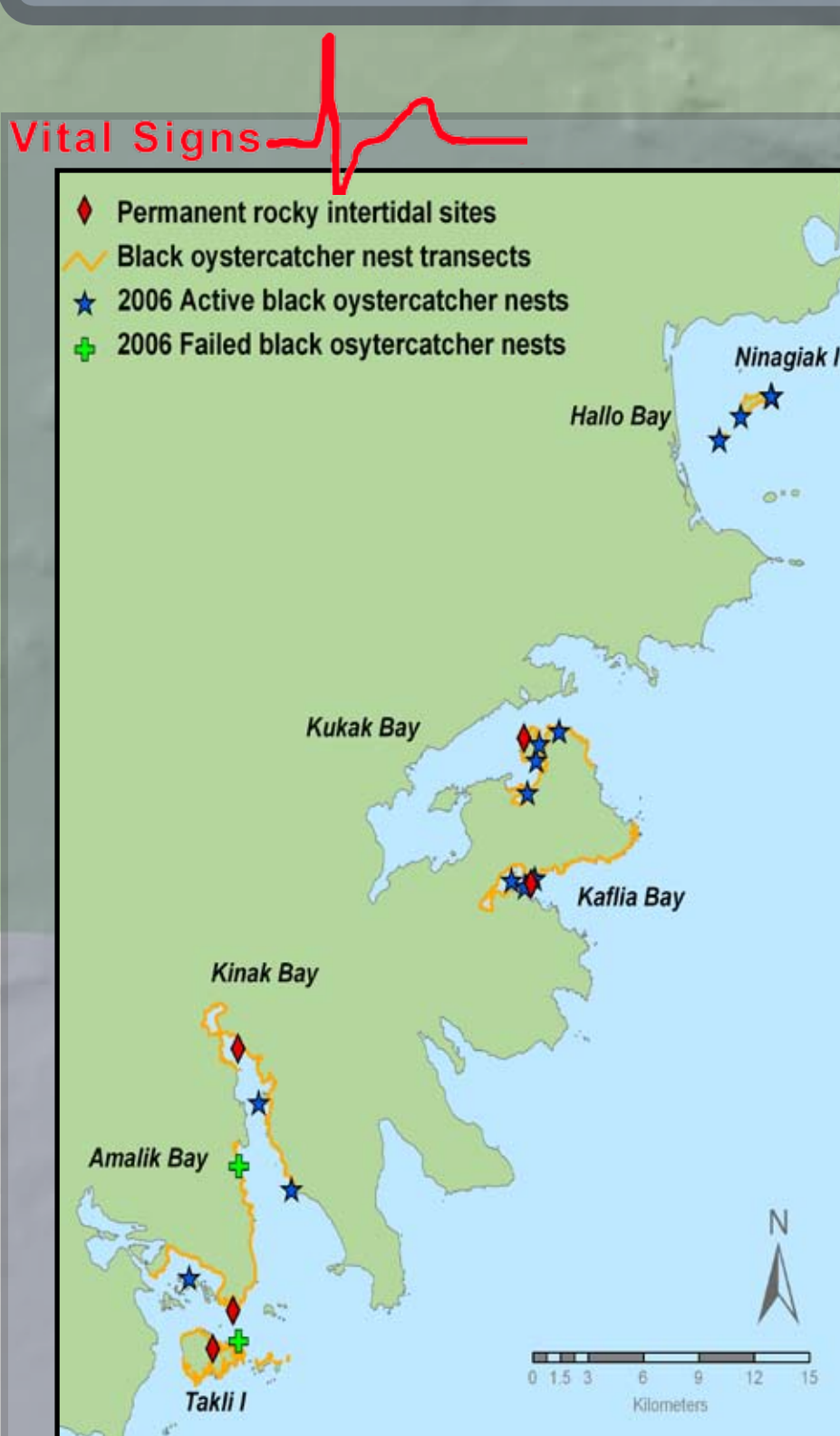


In 2006 we field tested a protocol for monitoring nearshore ecosystems in the Katmai National Park and Preserve (KATM) unit of the Southwest Alaska Network (SWAN) of National Parks. The protocol includes six draft standard operation procedures that correspond to NPS “vital signs”. These include:

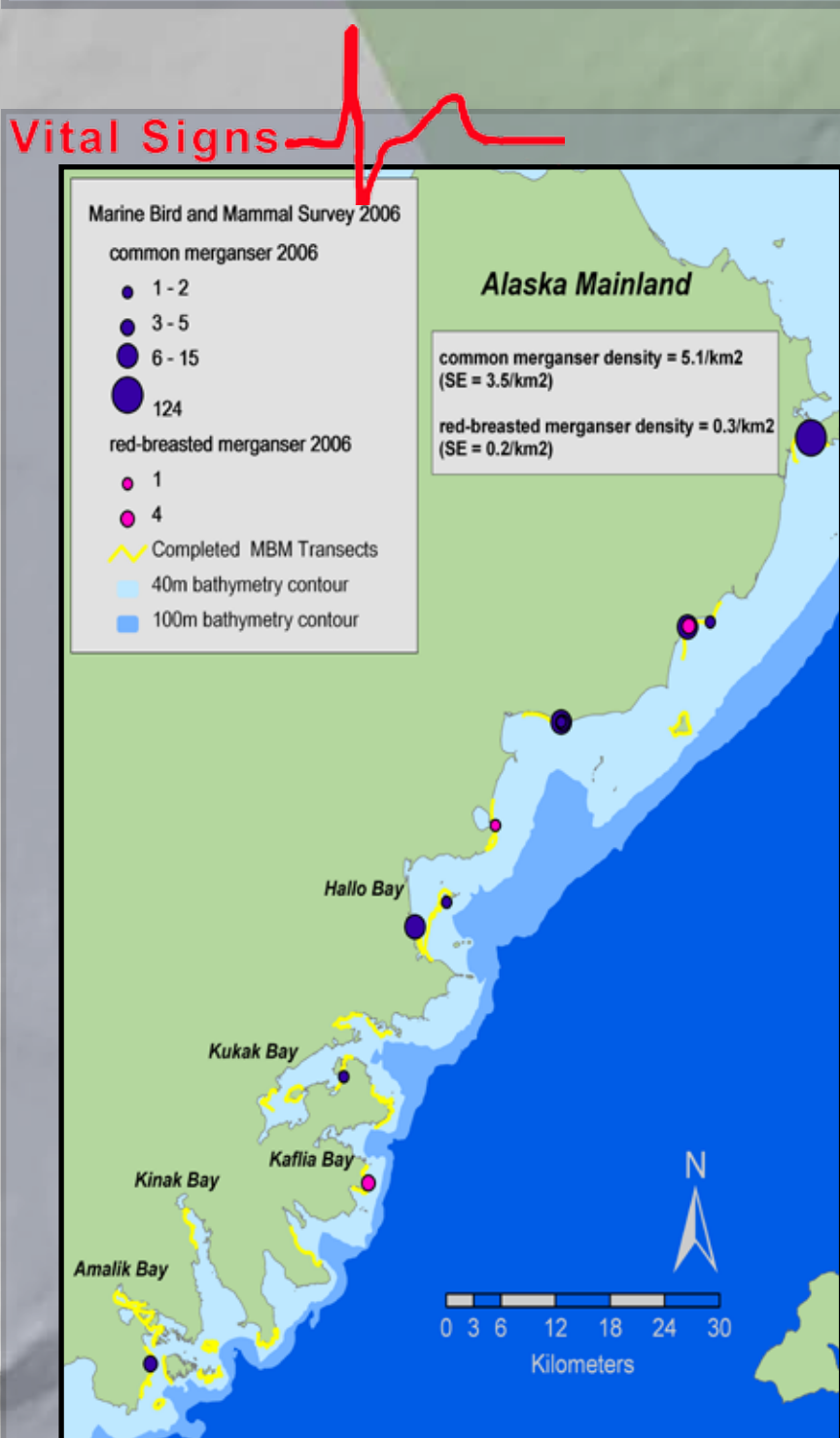
- Vital Signs**
- **Marine Water Chemistry**
 - **Kelps and Seagrasses**
 - **Marine Intertidal Invertebrates**
 - **Marine Birds**
 - **Black Oystercatchers**
 - **Sea Otters**

We established five permanent rocky intertidal transects that provide focal points for vital sign sampling (**red diamonds**)



Black Oystercatchers

Data from the 2006 marine bird and mammal survey indicated BLOY densities of 3.2/km². Black oystercatcher nest transects were selected based on the 5 permanent rocky intertidal sites. We located 12 black oystercatcher nests on 100 km of systematic transect, 10 active nests contained a total of eight eggs and 10 chicks.



Marine Birds

We surveyed marine birds and mammals along 25 systematically selected transects (**yellow lines**). The most abundant seabirds were glaucous-winged gulls (87.2/km²), cormorants (68.3/km²), black-legged kittiwakes (58.4/km²), scoters (21.4/km²), and harlequin ducks (16.9/km²). Steller sea lions (6.2/km²) had the highest density of the marine mammals.

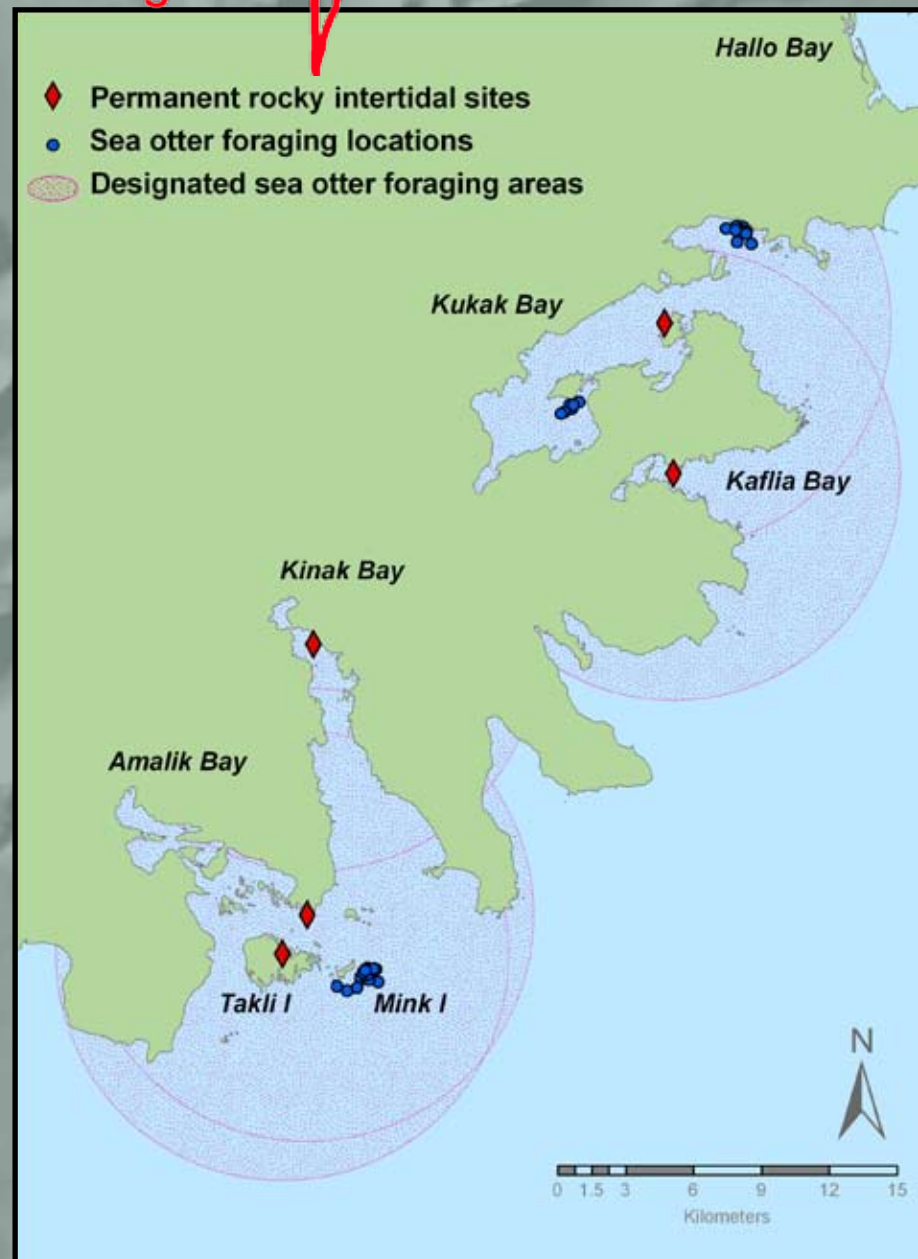
Vital Signs



Marine Water Chemistry Kelps and Seagrasses Marine Intertidal Invertebrates

A Hobo temperature recording device was placed at each transect origin of the permanent rocky intertidal sampling sites. Algae and invertebrates were sampled along these 100 m transects in a nested sampling design. Samples of mussels and limpets at each site were used to estimate size distributions.

Vital Signs

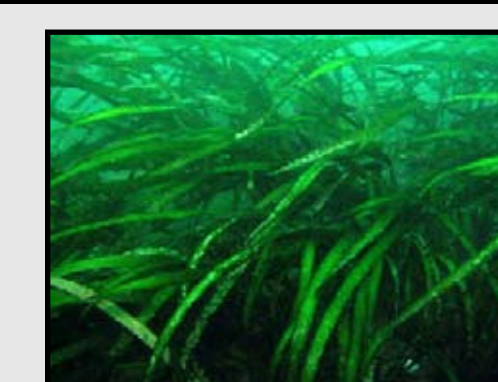
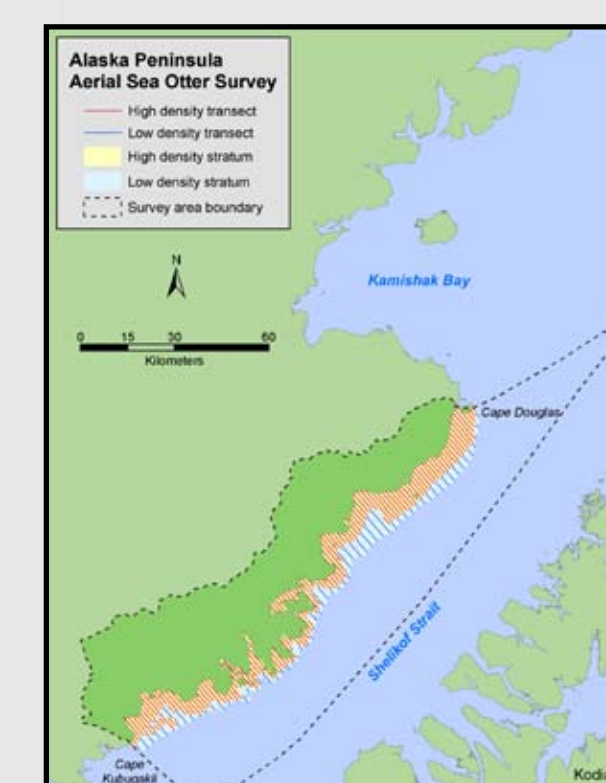


Sea Otters

Data from the 2006 marine bird and mammal survey indicated sea otter densities were 4.9/km². Foraging and carcass collection areas were selected based on the 5 permanent rocky intertidal sites. Sea otter diet consisted predominantly of clams (76%), octopus (2%), snails (10%), sea stars (2%), chitons (5%), crabs (3%), urchins (2%), and other prey items (<1%). We recovered 37 sea otter carcasses from beaches along the KATM coast, most of those associated with off shore islands where sea otters commonly haul out.

Plans for 2007

- Revise and repeat monitoring SOPs from 2006
- Implement sea otter aerial surveys
- Implement soft sediment invertebrate sampling
- Implement videography and mapping of subtidal kelp beds and eelgrass beds



♦ Permanent rocky intertidal sites

Established marine bird and mammal survey transects

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